

ARMY WATER PURIFICATION MISSION LEADS TO SUCCESSFUL PARTNERING EFFORT

Introduction

The Army recently focused its attention on Guam and other areas of the Pacific to test new technologies for converting field water into drinking water and to determine if these technologies will meet the Army's needs in the 21st century. The success of this story is not only in the technology itself, but the successful partnering effort of various agencies that will ultimately benefit DOD and other agencies on Guam and throughout the world.

With very short notice, the Army is sometimes requested to send personnel to remote sites to provide assistance in emergency conditions. The single most essential element necessary for human survival in these conditions is drinking water. The key word, however, is *safe* drinking water.

Water Purification

The Reverse Osmosis Water Purification Unit (ROWPU) is a miniature water plant that processes tainted or dirty water and makes it safe to drink. ROWPUs are widely used by the military to produce drinking water in emergency or wartime conditions. ROWPUs are assigned to various units among the Services and come in different sizes to accommodate the amount of water to be processed.

The ROWPU is a dependable piece of equipment that does a tremendous amount of good. However, it *does* present a challenge. Because the ROWPU filters out a lot of the "junk" from the water, the ROWPU system must be periodically cleaned to unclog its filters.

One cleaning process involves reversing the water to unclog the filters. This process creates "backwash." Another process using chemicals and detergents to clean the system generates "brine." This backwash and brine is nonpotable water that must be properly treated so it can be placed back into the environment.

Disposal Of Nonpotable Water

The Guam Army National Guard (GUARNG) faced the problem of how to dispose of brine and backwash and turned to the U.S. Army, Pacific (USARPAC), for assistance. Under environmental regula-

tions in effect at that time, Guard units were not allowed to dump the backwash or brine back into the ocean, nor were they allowed to place it in the municipal wastewater. There were concerns that the backwash and brine would be detrimental to the environment and would disrupt operations at the wastewater plant.

USARPAC's search for solutions began. Eventually, USARPAC's Environmental Engineering Office and Logistics Office worked closely to bring together the private sector and every portion of the military as participants in finding the solution. (ROWPU backwash disposal turned out to be a concern throughout DOD and many other government agencies.) The following agencies had a role in the effort to find solutions: Office of the Army Deputy Chief of Staff for Logistics (ODCSLOG); U.S. Army Forces Command (FORSCOM); U.S. Army Tank-automotive and Armaments Command (TACOM); National Guard Bureau; GUARNG; U.S. Navy Public Works Center, Guam; Guam Environmental Protection Agency (GEPA); and Guam Water Authority (GWA).

New Filtration System

During the search, USARPAC linked with FORSCOM in Atlanta, GA, which had been encountering the same disposal problems. FORSCOM had a new technology that met their needs—the Multi-Modular Fluid Filtration System (MMFFS). The MMFFS is a compact filtration system that can be easily retrofitted and added to existing ROWPUs. It provides additional filtration capabilities to help reduce the wear and tear on the ROWPU and help minimize the byproducts of nonpotable wash waters. In Guam, TACOM tested the new MMFFS using Army standards for tropical-seawater conditions.

Information Sharing

Because of its strategic location between time zones from Guam to the eastern United States, USARPAC orchestrated extensive coordination among all agencies prior to a meeting in Guam to test the MMFFS. The participants' information

sharing about the ROWPU process and technology, as well as the challenges faced by the Guam Army National Guard, helped foster communication and the spirit of cooperation at the Guam meeting.

The GEPA began to discuss possible options for allowing the nonpotable water to be disposed of at or near the test site. In addition, GWA initiated discussions with GUARNG for a potential joint project. During GUARNG's exercises with the ROWPU, GWA would accept the nonpotable water, usually high in salt minerals, for use in other plant operations. Hopefully, this would improve the plant's efficiency, create a method for GUARNG to dispose of their nonpotable water, and provide a benefit for GWA.

This initiative brought together expertise from the U.S. Navy in Guam; TACOM engineers and laboratory personnel from Warren, MI; and MMFFS manufacturer Global Environmental Technologies in Pennsylvania. In addition, FORSCOM supported the effort with the loan of a new MMFFS. Lab testing of the water products is ongoing.

Conclusion

The potential wastewater disposal solutions developed for Guam may contribute to the disposal solutions throughout the Department of the Army, DOD, and the private sector. The bottom line of this "win-win" story, however, is cooperation and partnering—with everyone benefiting!

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